

USDA Imagery Planning and Coordination Meeting

December 7-8, 2010

Salt Lake City, UT

Meeting Objectives

- Coordinate Imagery Acquisition
 - NAIP
 - Review NAIP program performance for stake holders
 - Build on experience and lessons learned for new contract
- Coordinate other geodata/imagery needs
 - USFS resource
 - NRCS
 - Satellite
 - Elevation
 - Ground control
- Determine Requirements for Distribution and Archive Services
 - For NAIP and other data acquired by APFO
 - NAIP products
- Develop some continuity
 - Review 2009 meeting action items

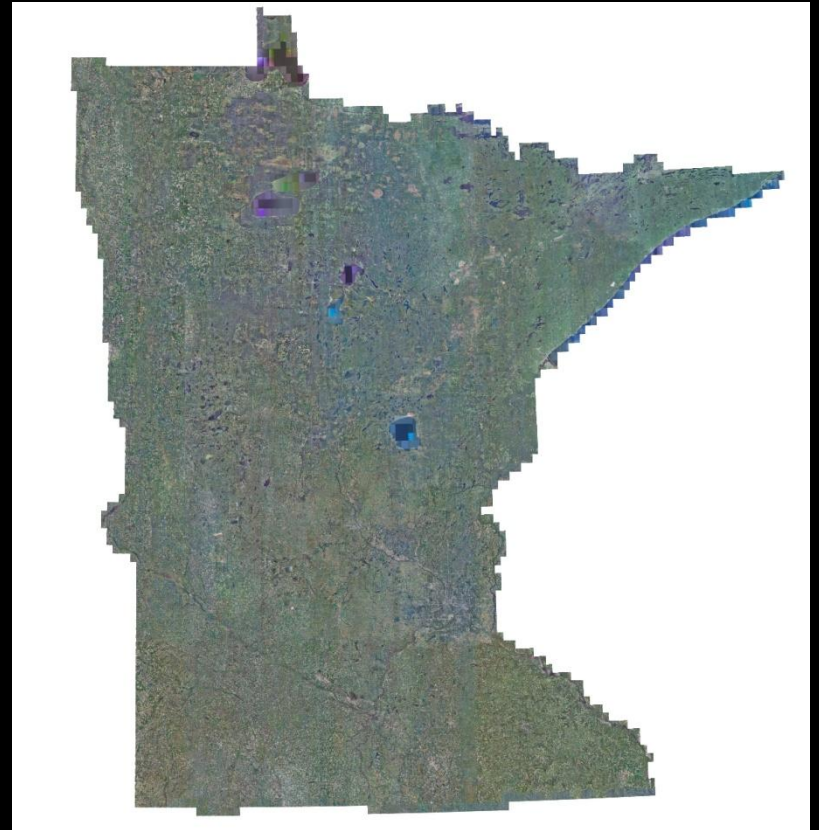
2009 Action Items

- **(SOFT ACTION ITEM)** - It would be good to have brief on digital stereo from the USFS, maybe next year? Melinda would be willing to share.
- **ACTION ITEM (APFO-GSB)** – define level of backup or archive for resource based on customer requirements (maybe expand scope to seek an understanding of digital acquisition requirements).
- **ACTION ITEM (Glenn Bethel)** – Imagery requirements from Agencies for disaster response? At a minimum a contact list.
- **ACTION ITEM (Cindy Sessions)** – Send sample prints to each region + price sheets. CC Bill Belton and Karen Nabity. May want some samples of various camera formats, as well as some stereo coverage where possible. Specifics on bands and histogram stretch from Forest.
- **ACTION ITEM (APFO)** – Article in other pubs, about land use change, historical imagery and agriculture projects...expand past just geospatial world.
- **ACTION ITEM (David Davis, Kent Williams)** – Review Deliver Formats of NAIP Deliverables, and the Delivery System. Formulate Team.
- **ACTION ITEM (Bill Belton and Lori Uhlhorn)** – sharing data or transmitting data to GSTC.
- **ACTION ITEM (Lori Uhlhorn)** – Gateway Big County Solution – 4GB limit
- **ACTION ITEMS (Bridget Barlow)** – Provide Status Map for NAIP Projects Receive and Release.
- **ACTION ITEM (Melinda McGann)** – Photo Center Points for Resource photography to David Parry.
- **ACTION ITEM (Geoffrey Gabbott)** – Provide Unit Cost for Digital Acquisition to the Forrest.
- **ACTION ITEM (Glenn Bethel)** – Provide Contact to USFS for WARP Training.

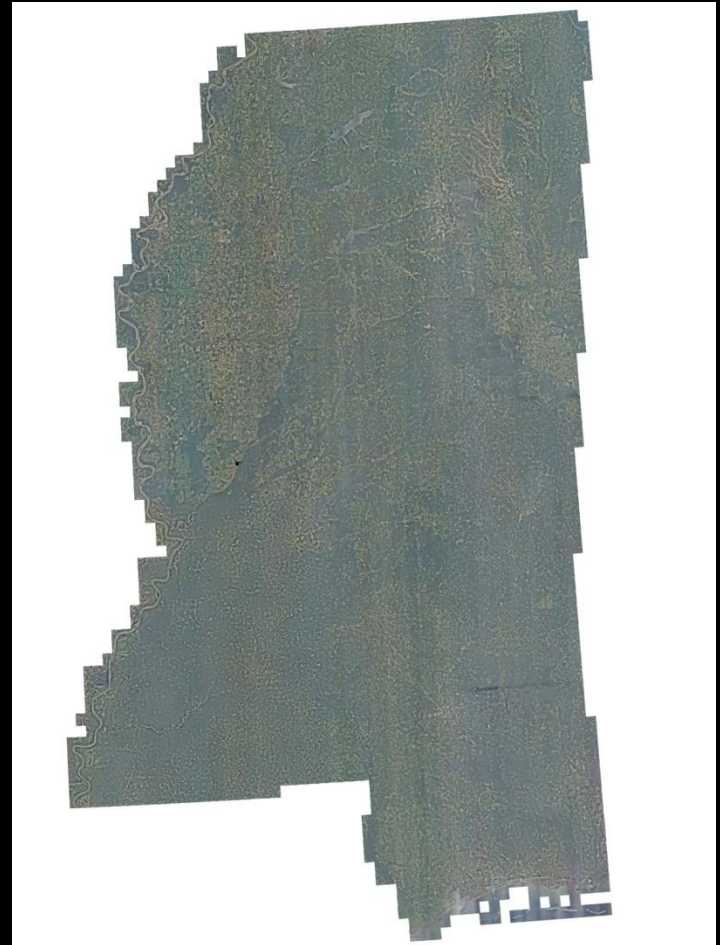
NAIP 2010 Review

- Image Quality Assessment
 - Haven't been able to assess current year imagery for planning meeting before
 - Problem Log
- Conclusions from Contractor Lessons Learned
 - ID items to evaluate for new contract

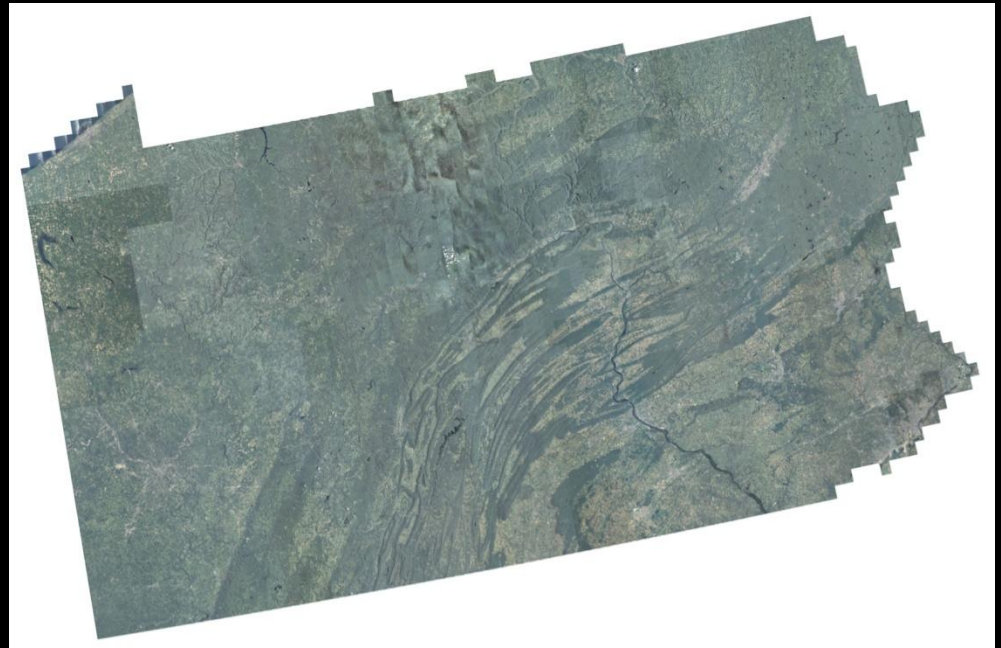
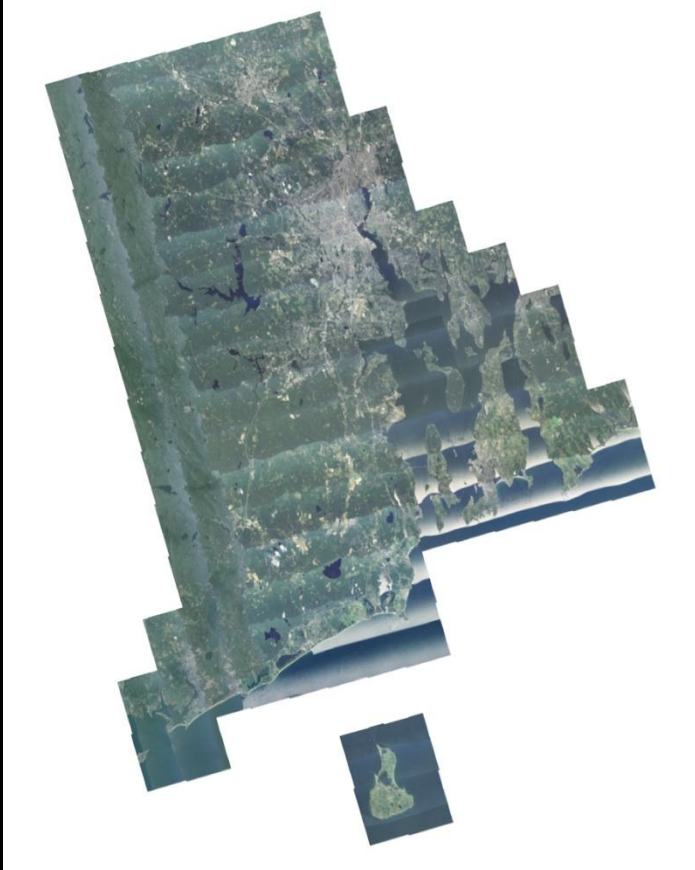
Northern Mid West (ND-MN)



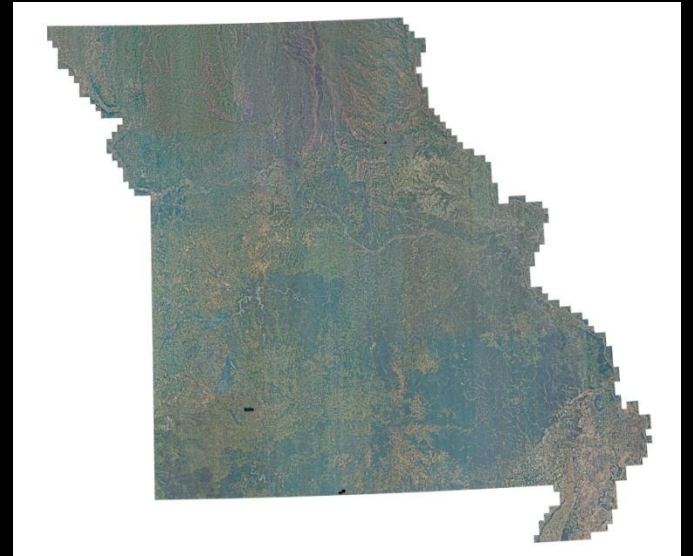
South East (LA MS)



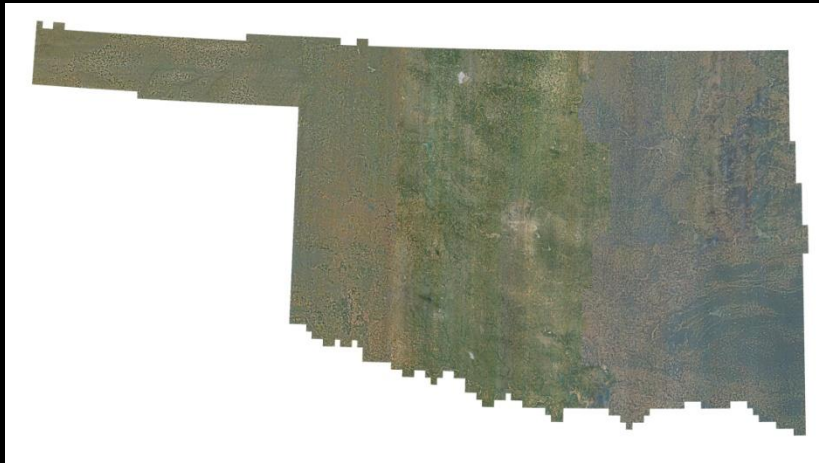
North East (RD-PA)



Central Mid West (KS-Mo)



South Mid West (OK-TX)



South West (CA-AZ)



East Central Mid West (IL-IN)



2010 Lessons Learned Summary

- Recommendations
 - Re-evaluate need for DVD/CCM
 - Problem with large counties
 - Not the primary product for FSA anymore

Action: Determine product deliverables
 - Look into CIR standards
 - Graphic or analysis –from end users
 - Preserve radiometry or Color balance

Action: USDA working group, start working now for 2012
 - Acquire by regional blocks, not states (also in RFI response)
 - Reduce duplicate QQ coverage on borders

2010 Lessons Learned Summary

- Mixing direct digital sensor systems within the state
 - Metadata reflects mixed sensor
 - Goal is to maintain better metadata than that
 - action: determine requirements for image date metadata
 - Court evidence
 - Options
 - Raw data
 - Other way?
 - Will affect cost and schedule risk
- Web based product delivery systems
 - Action: Determine requirements
 - Preferable as a quick and dirty
 - QA, interim use in field, disaster, etc.
 - Final delivery later
 - Strong case for USDA to do this
 - SLA for final by contractor would be killer
 - All contractors can stand up at least a quick and dirty WMS

2010 Lessons Learned Summary

- ½ meter imagery
 - 4x storage is the big thing
 - Lower altitude
 - Facilitate acquisition in MOAs
 - PAN sharpening
 - Fly higher, keep acquisition costs down
 - DMC and ADS can do this
 - Marginal cost
 - Highly variable regionally, but APFO estimates 50%

2010 Lessons Learned Summary

- Airspace issues and photographing sensitive areas
 - Central info repository
 - All contractors support
 - APFO can host
 - What info?
 - Comes down to relationships
 - Contractor and ATC
 - Outreach
 - Helpful for USDA to provide introductory info
 - MAPPS – AP committee has been effective on similar issues
 - “conducting an aerial survey”
 - FAA ATC regional meetings
 - Stopgap options
 - Satt, option for MOAs like Nellis-large
 - Need to brainstorm other options

2010 Lessons Learned Summary

- Current marketing/lobbying efforts for future funding
 - Preparing for new congress
 - Goals reached:
 - Raised awareness
 - Projected cuts may help
 - Other feds may see as attractive if funds are cut
 - NAIP may not meet all requirements for other agencies, but may be good enough.
 - Draft language
 - Great partnership gov/contractor
 - Strictly a funding issue-no opposition/complaints
 - Free riders
 - accommodate because may be able to barter something in the future
 - Elevation data, etc.

2010 Lessons Learned Summary

- Small business enhancement/benefit
 - Industry development
 - Metrics
 - » IT money spent
 - » A/C, cameras, etc.
 - Value of the data (public domain)
 - Collect this info
 - Consultants (gray beards, inc) – easy to generate info
 - » NSGIC
 - » NAPA
 - » Place based – no money
 - Action: NAIP vendors will do an analysis
 - Come up with some categories
 - Action: Look for consultants to do economic analysis

2010 Lessons Learned Summary

- Potential partnership improvements
 - More feds
- Cost recovery
 - Agencies cannot augment budget
 - Could exercise copyright
- No NAIP year “event”

NAIP 2011 Planning

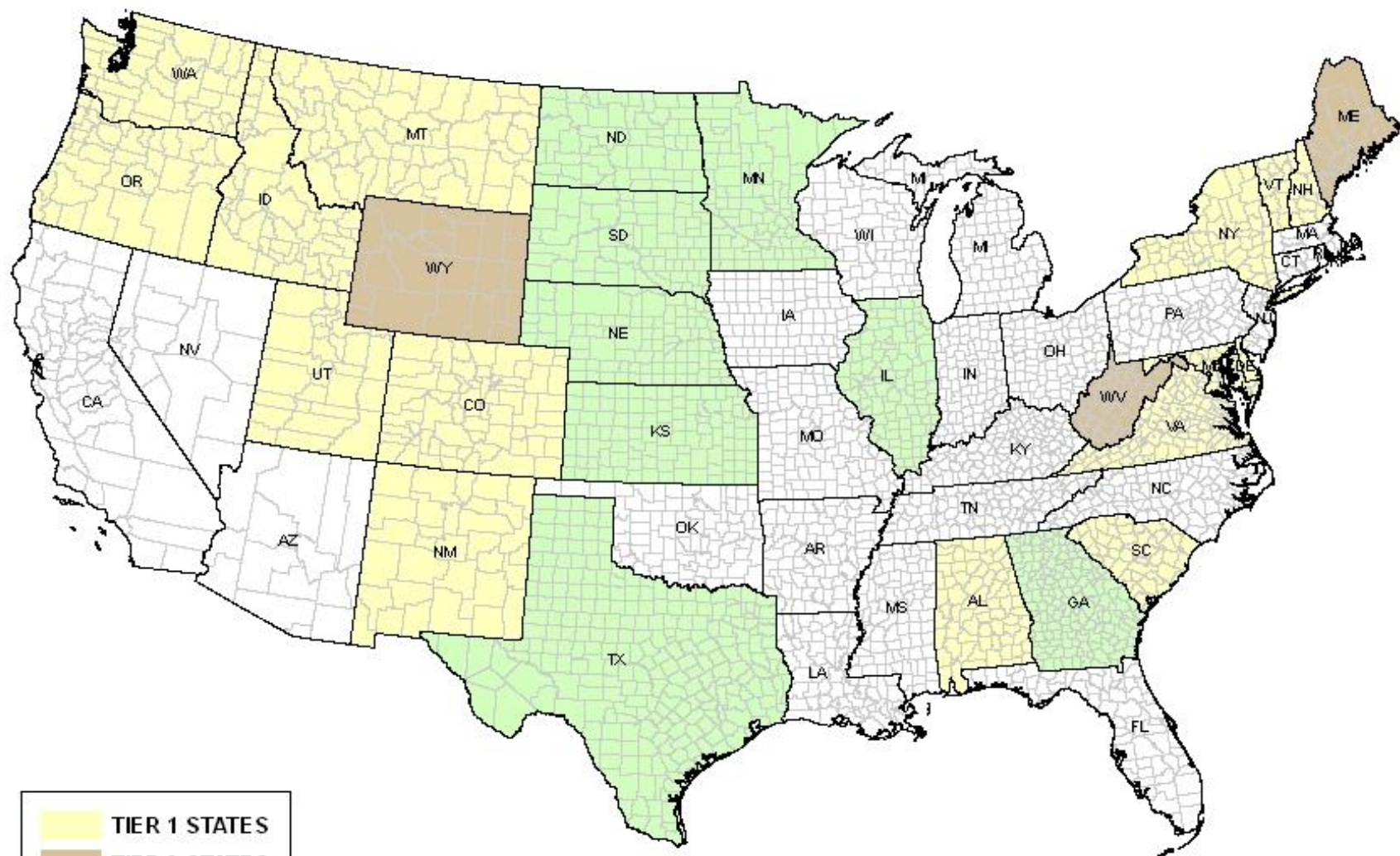
Funding

- \$10.4M submitted in FSA's President's Budget
- Continuing Resolution
 - Expect to issue RFP and contract as previous years
- Partnership MOUs need to be in place under assigned timeframes

2011 FSA Acquisition Priorities

- **FSA's goal** is to leverage Agency and partnership funding to extend **coverage over as many States as possible**
- **Collection Timeframe**
 - **Crop Growing Season** as Determined by FSA
- **Buy-Up Options**
 - 4-Band and
 - ½ Meter

2011 NAIP Acquisition Plan



NAIP 2011 Acquisition Plans

"Priority Tiers"

- Tier 1
 - States with 2009 NAIP imagery
 - Anticipated funding from FSA (\$10M)
 - Anticipated funding from Federal Cost Share Partners (\$4.4M)
 - Total anticipated funding \$14.4M
- Tier 2
 - Remaining states with 2009 NAIP imagery
 - Prioritized by FSA level of farm program activity
 - Additional funding needed (\$2.5M)
 - Total Tier 1 & 2 estimated funding \$16.9M required
- Tier 3
 - States with 2010 NAIP imagery
 - Prioritized by FSA level of farm program activity
 - Additional funding needed (\$11.6M)
 - Total Tier 1, 2, & 3 estimated funding \$28.5M required

NAIP 2011

Tier 1 States

Based on existing funding commitments by FSA and Federal Partners.

States with 2009 NAIP imagery, \$10M funding from FSA, \$4.4M funding from Federal Cost Share Partners, total anticipated funding \$14.4M

State	Tier Priority for 2011	NAIP Base Image Date	Full State Coverage QQs	4-Band Buy-Up		1/2 Meter Buy-Up (w/4-Band)	
				QQ Buy-up Cost	Partners Share (10% of full cost)	Average Difficulty State *	Partners Share
AL	1	2009	3,482	\$20	\$80,086.00	\$115	\$480,516.00
CO	1	2009	7,423	\$20	\$170,729.00	\$115	\$1,024,374.00
DE	1	2009	176	\$20	\$4,048.00	\$115	\$24,288.00
ID	1	2009	6,554	\$20	\$150,742.00	\$115	\$904,452.00
MD	1	2009	906	\$20	\$20,838.00	\$115	\$125,028.00
MT	1	2009	11,776	\$20	\$270,848.00	\$115	\$1,625,088.00
NH	1	2009	771	\$20	\$17,733.00	\$115	\$106,398.00
NM	1	2009	8,028	\$20	\$184,644.00	\$115	\$1,107,864.00
NY	1	2009	3,880	\$20	\$89,240.00	\$115	\$535,440.00
OR	1	2009	7,466	\$20	\$171,718.00	\$115	\$1,030,308.00
SC	1	2009	2,154	\$20	\$49,542.00	\$115	\$297,252.00
UT	1	2009	6,032	\$20	\$138,736.00	\$115	\$832,416.00
VA	1	2009	3,029	\$20	\$69,667.00	\$115	\$418,002.00
VT	1	2009	812	\$20	\$18,676.00	\$115	\$112,056.00
WA	1	2009	5,718	\$20	\$131,514.00	\$115	\$789,084.00

* Half meter buy-up costs are dependent on the acquisition difficulty of the state in terms of terrain, weather, etc.

** Half meter QQ buy-up costs may range from \$50 for a low difficulty state, to \$180 for a high difficulty state.

NAIP 2011

Tier 2 States

Based on additional funding to complete states not flown in 2010
Remaining states with 2009 NAIP imagery, \$2.5M additional funding needed, total tier 1 & 2 estimated funding \$16.9M required.

State	Tier Priority for 2011	NAIP Base Image Date	Full State Coverage QQs	4-Band Buy-Up		1/2 Meter Buy-Up (w/4-Band)	
				QQ Buy-up Cost	Partners Share (10% of full cost)	Average Difficulty State *	Partners Share
ME	2	2009	2,748	\$20	\$63,204.00	\$115	\$379,224.00
WV	2	2009	1,831	\$20	\$42,113.00	\$115	\$252,678.00
WY	2	2009	7,357	\$20	\$169,211.00	\$115	\$1,015,266.00

* Half meter buy-up costs are dependent on the acquisition difficulty of the state in terms of terrain, weather, etc.

** Half meter QQ buy-up costs may range from \$50 for a low difficulty state, to \$180 for a high difficulty state.

NAIP 2011

Tier 3 States

Based on additional funding by FSA (\$24M total)

States with 2010 NAIP imagery, \$11.6M additional funding needed, total tier 1, 2, & 3 estimated funding \$28.5M required

State	Tier Priority for 2011	NAIP Base Image Date	Full State Coverage QQs	4-Band Buy-Up		1/2 Meter Buy-Up (w/4-Band)	
				QQ Buy-up Cost	Partners Share (10% of full cost)	Average Difficulty State * Cost **	Partners Share QQ
GA	3	2010	3,913	\$20	\$89,999.00	\$115	\$539,994.00
IL	3	2010	4,131	\$20	\$95,013.00	\$115	\$570,078.00
KS	3	2010	5,902	\$20	\$135,746.00	\$115	\$814,476.00
MN	3	2010	6,791	\$20	\$156,193.00	\$115	\$937,158.00
ND	3	2010	5,712	\$20	\$131,376.00	\$115	\$788,256.00
NE	3	2010	5,625	\$20	\$129,375.00	\$115	\$776,250.00
SD	3	2010	5,992	\$20	\$137,816.00	\$115	\$826,896.00
TX	3	2010	17,277	\$20	\$397,371.00	\$115	\$2,384,226.00

* Half meter buy-up costs are dependent on the acquisition difficulty of the state in terms of terrain, weather, etc.

** Half meter QQ buy-up costs may range from \$50 for a low difficulty state, to \$180 for a high difficulty state.

NAIP Planning

Post 2011 Funding Strategy

1. Maintain Current Business Model
 - Cost Share in Acquisition
 - Partners fund Buy Ups
 - Recovery of Distribution Costs
2. Implement More Consistent Cost Share Model
 - Based on Land Area Interest
3. Keep the funding coming from partner agencies
 - Measure and Demonstrate Performance
 - Show Value for Agencies
4. Attract more cost share partners
 - Encourage Buy-Ups
 - Show use by non-cost share partners
5. Emphasize Cost Recovery
6. Look at Alternative Business Models
 - IFTN
 - other

NAIP Post 2011

Cost Share Proposal

- Based on Agency Area of Interest
 - Agricultural Land (private) funded by FSA and NRCS 50/50
 - National Forest Land funded by USFS
 - NPS, BLM, FWS, Reservations, funded by USGS

NAIP 2012 –Annual Coverage

*Cost Share funding targets
based on proposed cost share model*

	Cost Share Target	sq miles	QQs		base QQ cost	Totals
					\$220	
USFS	National Forests	326,856	22,495	10.5%		\$4,948,955
DOI	BLM, NPS, FWS, Indian	349,451	24,050	11.2%		\$5,291,068
	Other fed land	149,530	10,291	4.8%		\$2,264,047
USDA	Non fed land	2,293,779	157,865	73.5%		
	FSA 50%					\$17,365,154
	NRCS 50%					\$17,365,154
CONUS		3,119,616	214,702			\$47,234,379

NAIP 2012 – 2 Year Cycle

*Cost Share funding targets
based on proposed cost share model*

	Cost Share Target	sq miles	2 year Cycle	QQs		base QQ cost	Totals
						\$220	
USFS	National Forests	326,856	163,428	11,248	10.5%		\$2,474,478
DOI	BLM, NPS, FWS, Indian	349,451	174,726	12,025	11.2%		\$2,645,534
	Other fed land	149,530	74,765	5,146	4.8%		\$1,132,023
USDA	Non fed land	2,293,779	1,146,890	78,933	73.5%		
	FSA 50%						\$8,682,577
	NRCS 50%						\$8,682,577
CONUS		3,119,616		107,351			\$23,617,189

NAIP 2012 – 3 Year Cycle

*Cost Share funding targets
based on proposed cost share model*

	Cost Share Target	sq miles	2 year Cycle	QQs		base QQ cost	Totals
						\$220	
USFS	National Forests	326,856	108,952	7,498	10.5%		\$1,649,652
DOI	BLM, NPS, FWS, Indian	349,451	116,484	8,017	11.2%		\$1,763,689
	Other fed land	149,530	49,843	3,430	4.8%		\$754,682
USDA	Non fed land	2,293,779	764,593	52,622	73.5%		
	FSA 50%						\$5,788,385
	NRCS 50%						\$5,788,385
CONUS		3,119,616		71,567			\$15,744,793

NAIP Success Factors

Performance Metrics

FSA Requirements	NAIP Specs	Metric
Visually identify ground features	Image quality	<ul style="list-style-type: none"> Image Quality Assessment % QQs with < 10% cloud cover (by state)
Trusted, authoritative base imagery for FSA programs	Horizontal Accuracy	<ul style="list-style-type: none"> % of measured GCPs within tolerance (by state).
Show growing conditions	Acquired during growing season	<ul style="list-style-type: none"> % of quarter quads acquired within flying seasons
Imagery available before harvest	Delivery within 30 days	<ul style="list-style-type: none"> % of quarter quads delivered < 30 day timeline
Current as possible	Annual Coverage	<ul style="list-style-type: none"> % of states with < 1 year old

Image Quality Metrics

Metric	2008	2009
Image Quality Assessment	C	B
10% > cloud coverage	100% of the states (P)assed .16%=A	100% of the states (P)assed .16%=A
Ground control point Pass/fail based on percentage compliant. And STDEV	100% of states (P)assed 1.82= A	100% of states (P)assed 1.90 = A

Quality Metric Explained

- Image Quality
 - Compilation of both radiometric and visual effects.
A = outstanding B= Fair C = Poor
- Cloud Cover
 - Number of 10% cloud cover tiles / total tiles *100
Total cloud cover 0-3.3%=A, 3.4-6.7=B, 6.8-10%=C
- Ground control points
 - Spread based on Meter offset, Standard Deviation Units
A= 0 – 1.82, B=1.83 – 3.64, C= 3.65 – 5.46,
D = 5.46 – 6.0, F = >6.1 and
 - Pass: 90% of ABS no more than 6 meter offset

Maintain funding from partners

Document how imagery help agency mission

Farm Service Agency Metrics:

Possible Metrics	Description	Current Source of Data	How to Collect Data
Usage by programs			Page hit by FSA application (Thin Client)
Number of FSA Programs	Number of FSA programs imagery is used for	Annual FSA User Survey	New set of Survey Questions
Number of appeals	Number of appeals adjudicated based on imagery	State Offices	New set of Survey Questions
Map Generation	Number of Maps Containing NAIP are Generated	State and County Offices	New set of Survey Questions

Attract Additional Cost Share/Funding

Determine who else is using it, and how

Possible Metrics	Description	Current Source of Data	How to Collect Data
state agencies	I.D. State Agencies using NAIP		NSGIC Survey or template
Total Use	Total distribution and use from known distribution points	various-partners collect statistics in different ways	Require usage statistic reports in partner MOU/MOA. Combine with internal data.
Cost share percentage	% of total acquisition costs that come from cost share	internal spreadsheet	already doing it

Emphasize Cost Recovery

- Encourage Direct Sales from FSA
 - Quarter Quads should be purchased from FSA
 - Revenue offsets overhead costs
 - Prevent bartering between agencies
 - Distribution requests to 3rd parties referred to FSA
 - Will be reflected in copyright language

NAIP Cost Recovery

Estimated Direct Sales of Quarter Quads

		CONUS	2 year	3 year
States		\$244,137	\$122,069	\$81,379
Non Cost Share Feds	NGA	\$244,137	\$122,069	\$81,379
	DHS	\$244,137	\$122,069	\$81,379
	Census	\$244,137	\$122,069	\$81,379
	EPA	\$244,137	\$122,069	\$81,379
	BOR	\$244,137	\$122,069	\$81,379
	NOAA	\$244,137	\$122,069	\$81,379
	OSMRE	\$244,137	\$122,069	\$81,379
	DOE	\$244,137	\$122,069	\$81,379
	DOT	\$244,137	\$122,069	\$81,379
	R<A	\$244,137	\$122,069	\$81,379
	APHI	\$244,137	\$122,069	\$81,379
	NASS	\$244,137	\$122,069	\$81,379
		<u>\$3,173,781</u>	<u>\$1,586,891</u>	<u>\$1,057,927</u>

NAIP Distribution Costs

Cost Recovery Options

- Discontinue free downloads from USDA Geospatial Data Gateway?
 - Currently unlimited downloads from GDG

NAIP Cost Recovery

Cost Recovery Options– Direct Sales of CCMs

Entity	Domain	Downloads	Value
Commercial/Private	.net	14,828	\$741,400
	.com	85,740	\$4,287,000
			<u>\$5,028,400</u>
Non Profits	.org	3,468	<u>\$173,400</u>
Educational Institutions	.edu	6,110	<u>\$305,500</u>
Federal Non Cost Share			
	FBI.doj	8,955	\$447,750
	Census	4,541	\$227,050
	.mil	1,330	\$66,500
	NASS	1,171	\$58,550
	TVA	286	\$14,300
	APHIS	224	\$11,200
	EPA	197	\$9,850
	BOR	112	\$5,600
	NOAA	94	\$4,700
	OSMRE	64	\$3,200
	DOE (National Labs)	40	\$2,000
	DOT	50	\$2,500
	DHS	34	\$1,700
	RMA	27	\$1,350
			<u>\$856,250</u>

NAIP Distribution Costs

Cost Recovery - Issues

- Imagery is unlicensed
 - Very difficult to prevent resell without licensing data
 - NAIP on eBay, etc.
 - Can the government license data?
 - Should we even try?

Attract Additional Cost Share/Funding

Buy Ups – target State Partners

- 4 Band
- ½ meter
- Stereo?
- other

NAIP Planning

Post 2011 Products and Services

1. Products

- CCM
- QQs
- Both